

WHAT IS CLAIMED IS:

1. A method for pressing an object with a main piston placed in a main cylinder by means of applying a prescribed pressure to said main piston with working fluid wherein

5 said working fluid is compressed to said prescribed pressure by supplying said working fluid to said main cylinder with driving power of a piezoelectric element.

2. The pressing method according to claim 1 wherein a prescribed voltage is applied to said piezoelectric element repeatedly until the pressure of said working fluid reaches to said prescribed pressure.

3. A method for pressing an object with a main piston by means of working fluid to which a prescribed pressure is applied through a piping system, the piping system including a main cylinder, a supply line and a discharge line of said working fluid with respect to said main cylinder, a check valve preventing reverse flow of said working fluid from said main cylinder to said supply line, and a sub-cylinder provided within said supply line, the pressing method comprising:

5 a first step of displacing a sub-piston provided within said sub-cylinder from an initial position to press said working fluid such that said working fluid is introduced via said check valve to said main cylinder to displace said main piston provided within said main cylinder; and

10 a second step of causing said sub-piston to return to said initial position such that said working fluid is supplied to said sub-cylinder,

15 said first step and said second step being repeated successively until pressure of said working fluid in said main cylinder reaches a prescribed pressure level.

4. The pressing method according to claim 3 wherein said first step is performed in a state where a discharge control valve disposed in said discharge line and a supply control valve disposed in said

supply line are closed, and

5 said second step is performed in a state where said discharge control valve and said check valve are closed and said supply control valve is open.

5. The pressing method according to claim 4 wherein
 said supply control valve, said discharge control valve and said sub-
piston each have a piezoelectric element attached thereto, and
 said piezoelectric elements serve to open and close said supply
5 control valve and said discharge control valve, and to displace said sub-
piston from the initial position, respectively.

6. The pressing method according to claim 3 wherein
 a detector provided in said main cylinder detects the pressure of said
working fluid, and
 when said detector detects said prescribed pressure level, the
5 displacement of said sub-piston is terminated.

7. A pressing mechanism for pressing an object by means of
pressure of working fluid that is supplied from a working fluid source to a
piping system with a prescribed pressure, comprising:
 a main piston pressing said object;
5 a main cylinder having said main piston placed therein, and
supplied with said working fluid for displacement of said main piston;
 a check valve preventing reverse flow of said working fluid supplied
to said main cylinder;
 a sub-cylinder linked to said main cylinder and having said working
10 fluid reserved therein for supply to said main cylinder;
 a sub-piston placed within said sub-cylinder;
 a supply line for supplying said working fluid from said working
fluid source to said sub-cylinder;
 a supply control valve disposed in said supply line;
15 a discharge line for discharging said working fluid from said main
cylinder to said working fluid source;

a discharge control valve disposed in said discharge line;
a first driving mechanism driving said sub-piston;
a second driving mechanism driving said supply control valve;

20 and

a third driving mechanism driving said discharge control valve.

8. The pressing mechanism according to claim 7 wherein said first, second and third driving mechanisms each have a piezoelectric element, and said piezoelectric elements drive said sub-piston, said supply control valve and said discharge control valve, respectively.

9. The pressing mechanism according to claim 7 wherein, of said first, second and third driving mechanisms, at least said first driving mechanism includes a displacement enlarging portion that enlarges displacement of said sub-piston for transmission to said main piston.

10. The pressing mechanism according to claim 7 wherein said piping system through which said working fluid flows is built in said pressing mechanism.

11. A resin molding device using the pressing mechanism according to claim 7, comprising:

a reservoir in which molten resin is reserved;

5 resin; and
a plunger that is pressed by said main piston to press said molten

a cavity into which said pressed molten resin is introduced,

the molten resin introduced into said cavity being hardened for resin molding.